

This document provides pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Major, Municipal permit. The discharge results from the operation of a 0.50 MGD wastewater treatment plant. This permit will include expansion flows of 1.5 MGD and 3.0 MGD. This permit action consists of updating the proposed effluent limits to reflect the current Virginia Water Quality Standards, effective 6 January 2011 and updating permit language as applicable. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260 et seq.

1. Facility Name and Mailing Address:	Caroline County Regional WWTP P.O. Box 424 Bowling Green, VA 22427	SIC Code:	4952 WWTP
Facility Location:	12609 Mill Creek Road Ruther Glen, VA 22546	County:	Caroline
Facility Contact Name:	Joshua Carson / Chief Operator	Telephone Number:	804-448-0922
2. Permit No.:	VA0073504	Expiration Date:	17 June 2012
Other VPDES Permits:	VAR051710 – Industrial Stormwater General Permit VAN030045 – Watershed General Permit		
Other Permits:	Not Applicable		
E2/E3/E4 Status:	Not Applicable		
3. Owner Name:	Caroline County Public Utilities		
Owner Contact / Title:	Joseph Schiebel Interim Director of Public Utilities	Telephone Number:	804-633-4390
4. Application Complete Date:	30 January 2012		
Permit Drafted By:	Douglas Frasier	Date Drafted:	7 March 2012
Draft Permit Reviewed By:	Alison Thompson	Date Reviewed:	27 March 2012
WPM Review By:	Bryant Thomas	Date Reviewed:	10 April 2012
Public Comment Period:	Start Date: TBD 2012	End Date:	TBD 2012
5. Receiving Waters Information:			
Receiving Stream Name:	Polecat Creek	Stream Code:	8-PCT
Drainage Area at Outfall:	34.3 square miles*	River Mile:	5.92*
Stream Basin:	York River	Subbasin:	None
Section:	03	Stream Class:	III
Special Standards:	None	Waterbody ID:	VAN-F20R
7Q10 Low Flow:	0.0 MGD**	7Q10 High Flow:	0.0 MGD**
1Q10 Low Flow:	0.0 MGD**	1Q10 High Flow:	0.0 MGD**
30Q10 Low Flow:	0.0 MGD**	30Q10 High Flow:	0.0 MGD**
Harmonic Mean Flow:	0.0 MGD**	30Q5 Flow:	0.0 MGD**
303(d) Listed:	Yes – Aquatic Life Use for dissolved oxygen (DO) and pH		
TMDL Approved:	No – 2022 & 2016, respectively	Date TMDL Approved:	Not Applicable

*Updated with this reissuance – see **Attachment 5**.

**At the point of discharge, the receiving stream does not have a natural, defined channel; indicative of marsh waters.

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

✓	State Water Control Law	_____	EPA Guidelines
✓	Clean Water Act	_____	Water Quality Standards
✓	VPDES Permit Regulation	_____	Other: 9VAC25-820 et seq. – <i>Nutrient Watershed General Permit</i>
✓	EPA NPDES Regulation	_____	9VAC25-720 et seq. – <i>Water Quality Management Plan Regulation</i>
			9VAC25-40 et seq. – <i>Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed</i>

7. Licensed Operator Requirements: Class II at the design flows of 0.50 MGD and 1.5 MGD.
Class I upon issuance of the CTO for the 3.0 MGD facility.

8. Reliability Class: Class I at all design flows.

9. Permit Characterization:

<input type="checkbox"/> Private	<input checked="" type="checkbox"/> Effluent Limited	<input type="checkbox"/> Possible Interstate Effect
<input type="checkbox"/> Federal	<input checked="" type="checkbox"/> Water Quality Limited	<input type="checkbox"/> Compliance Schedule Required
<input type="checkbox"/> State	<input checked="" type="checkbox"/> Toxics Monitoring Program Required	<input type="checkbox"/> Interim Limits in Permit
<input checked="" type="checkbox"/> POTW	<input checked="" type="checkbox"/> Pretreatment Program Required	<input type="checkbox"/> Interim Limits in Other Document
<input type="checkbox"/> TMDL		

10. Wastewater Sources and Treatment Description:

Influent enters a pump station prior to the headworks. The headworks consist of two parallel channels each equipped with manually cleaned coarse bar screens, followed by a vortex-type grit chamber (currently not in service). Magnesium hydroxide is introduced at this point for alkalinity. Wastewater then flows to the aeration basin (oxidation ditch) equipped with mechanical disc aerators. A distribution box divides flow between two clarifiers. Clarified effluent flows to the filter influent pump station then to the tertiary filters. Filtered effluent flows to the ultraviolet (UV) disinfection unit followed by a series of cascade aeration steps before final discharge to Polecat Creek.

Septage receiving facilities include a screen, two aerated holding tanks and a pumping station. Septage can be introduced into the treatment works via the digestion tank or the headworks at the influent pump station.

Solids handling facilities include an aerated sludge digestion tank, drying beds, belt filter press, chemical feed and sludge cake handling appurtenances.

The facility, at the time of this Fact Sheet, is under construction, expanding the current 0.50 MGD plant to 1.5 MGD. The upgrades during construction include a mechanical barscreen, a five-stage Bardenpho activated sludge process unit and a tertiary denitrification filtration system.

See **Attachment 1** for a facility schematic/diagram.

See **Attachment 2** for the Certificate to Construct.

TABLE 1 OUTFALL DESCRIPTION				
Number	Discharge Sources	Treatment	Design Flows	Latitude / Longitude
001	Domestic / Commercial Wastewater	See Section 10	0.50 MGD (expansions at 1.5 and 3.0 MGD)	37° 57' 54.1" / 77° 25' 14.9"
See Attachment 3 for the Ruther Glen topographic map.				

11. Sludge Treatment and Disposal Methods:

Wasted sludge is aerobically digested with a solids retention time (SRT) of 12 – 17 days prior to being dewatered via a belt filter press. The facility does not digest to Class B Standards. The sludge is transported to the Old Dominion Landfill (permit number SWP553) located at 2001 Charles City Road, Richmond, VA for final disposal. The WWTP generates approximately 115 dry metric tons per year.

12. Discharges and Monitoring Stations within waterbody VAN-F20R:

TABLE 2 DISCHARGES & MONITORING STATIONS			
ID / Permit Number	Facility Name	Type	Receiving Stream
VA0085871	Love's Travel Stop #435	Stormwater Discharge	Polecat Creek, UT
VA0090930	Lake Caroline WTP (nonoperational)	Industrial Discharge	Stevens Mill Run
VAR051972	Reynolds Used Auto Parts	Industrial Stormwater General Permit	Lake Caroline, UT
8-PCT002.29	DEQ Monitoring Station		Polecat Creek

13. Material Storage:

TABLE 3 MATERIAL STORAGE		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
Liquid Alum	10,000 gallons	Best Management Practices (BMPs)
Magnesium Hydroxide	3,000 gallons	

14. Site Inspection: Performed by DEQ-NRO Compliance Staff on 15 February 2011 (see **Attachment 4**).**15. Receiving Stream Water Quality and Water Quality Standards:****a. Ambient Water Quality Data**

Polecat Creek is monitored at DEQ monitoring station 8-PCT002.29; located approximately 3.6 miles downstream of Outfall 001 at the Route 601 bridge crossing. Polecat Creek has been listed as impaired for the Aquatic Life Use due to excursions for dissolved oxygen and pH. The Total Maximum Daily Loads (TMDLs) for these impairments are expected in 2022 and 2016, respectively. However, if it is determined that the aforementioned excursions are caused by natural conditions, the TMDLs will not be required.

The full planning statement is found in **Attachment 5**.

Significant portions of the Chesapeake Bay and its tributaries are listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal. Additionally, the 2010 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that much of the mainstem Bay does not fully support this use support goal under Virginia's Water Quality Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment. EPA issued the Bay TMDL on 29 December 2010. It was based, in part, on the Watershed Implementation Plans developed by the Bay watershed states and the District of Columbia.

The Chesapeake Bay TMDL addresses all segments of the Bay and its tidal tributaries that are on the impaired waters list. As with all TMDLs, a maximum aggregate watershed pollutant loading necessary to achieve the Chesapeake Bay's water quality standards has been identified. This aggregate watershed loading is divided among the Bay states and their major tributary basins, as well as by major source categories (i.e. wastewater, urban storm water, onsite/septic agriculture, air deposition). Fact Sheet Section 17.e. provides additional information on specific nutrient limitations for this facility to implement the provisions of the Chesapeake Bay TMDL.

b. Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream, Polecat Creek, is located within Section 3 of the York River Basin and designated as Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32° C and maintain a pH of 6.0 – 9.0 standard units (S.U.).

Attachment 6 details other water quality criteria applicable to the receiving stream.

Ammonia:

The fresh water, aquatic life Water Quality Criteria for Ammonia is dependent on the instream temperature and pH. The 90th percentile temperature and pH values are used because they best represent the critical conditions of the receiving stream. Since it is staff's best professional judgement that the critical 30Q10 flow of the receiving stream is 0.0 MGD, effluent pH and temperature data may be used to establish the ammonia criterion. Staff utilized effluent pH data as reported on the July 2007 – November 2011 Discharge Monitoring Reports. Since there is no temperature data readily available for staff's use, a default temperature value of 25° C for summer and an assumed value of 15° C for the winter months were utilized.

The ammonia criteria can be found in **Attachment 6**

Metals Criteria:

The Water Quality Criteria for some metals are dependent on the receiving stream and/or effluent hardness values (expressed as mg/L calcium carbonate). There is no hardness data available for the receiving stream and the effluent values are artificially elevated due to the addition of magnesium hydroxide at the headworks. The average hardness value, per the permit application, was reported at 403 mg/L as CaCO₃; therefore, staff has proposed utilizing an effluent hardness value of 94 mg/L that was ascertained during the last reissuance. This recognizes the hardness values that would normally occur prior to the chemical addition.

The hardness-dependent metals criteria shown in **Attachment 6** are based on this average value.

Bacteria Criteria:

The Virginia Water Quality Standards 9VAC25-260-170.A state that the following criteria shall apply to protect primary recreational uses in surface waters:

E. coli bacteria per 100 mL of water shall not exceed a monthly geometric mean of the following:

	Geometric Mean ¹
Freshwater <i>E. coli</i> (N/100 mL)	126

¹For a minimum of four weekly samples taken during any calendar month

c. Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Polecat Creek, is located within Section 3 of the York River Basin. This section has not been designated with a special standard.

d. Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched on 3 February 2012 for records to determine if there are threatened or endangered species in the vicinity of the discharge. The following threatened species were identified within a 2 mile radius of the discharge: Upland Sandpiper (song bird); Loggerhead Shrike (song bird); Bachman's Sparrow; Bald Eagle; and Migrant Loggerhead Shrike (song bird). The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and protect the threatened species found near the discharge.

16. Antidegradation (9VAC25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained.

Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The permit limits established for this facility were developed recognizing the ecological characteristics of a marsh or swamp environment. The limits were calculated to maintain the Virginia Water Quality Standards and to protect the existing water quality of the receiving waters. Because of this, it is staff's best professional judgment that the waterbody is a Tier I water.

17. Effluent Screening, Wasteload Allocation and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points are equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA s) are calculated. In this case since the critical 7Q10, 30Q10 and 1Q10 flows have been determined to be zero, the WLAs are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency and statistical characteristics of the effluent data.

a. Effluent Screening

Effluent data obtained from Discharge Monitoring Reports (DMRs) and the permit application has been reviewed and determined to be suitable for evaluation.

The following pollutants require a wasteload allocation analysis: Cadmium, Copper, Nickel and Zinc.

b. Mixing Zones and Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f) (Q_s)] - [(C_s) (f) (Q_s)]}{Q_e}$$

Where:

WLA	=	Wasteload allocation
C _o	=	In-stream water quality criteria
Q _e	=	Design flow
Q _s	=	Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; harmonic mean for carcinogen-human health criteria; 30Q10 for ammonia criteria; and 30Q5 for non-carcinogen human health criteria)
f	=	Decimal fraction of critical flow
C _s	=	Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10, 1Q10 and 30Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the C_o.

c. Effluent Limitations, Outfall 001 – Toxic Pollutants

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D. requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1). Ammonia as N / Total Kjeldahl Nitrogen:

Staff utilized effluent pH reported on the July 2007 – November 2011 Discharge Monitoring Reports during the last permit term and default temperature values to determine the ammonia water quality criteria. DEQ guidance suggests using a sole data point of 9.0 mg/L to ensure the evaluation adequately addresses the potential for ammonia to be present in a discharge containing domestic sewage. The resulting wasteload allocations (WLAs) produced a monthly average ammonia limit of 1.6 mg/L (**Attachment 7**).

During the last reissuance, staff carried forward a Total Kjeldahl Nitrogen (TKN) limit of 3.0 mg/L. The current VPDES Permit Manual discusses applying this limit in instances where mixing is rather limited such as a swamp environment. As the waste stream is treated, the ammonia component of TKN is converted to Nitrate (NO₃) and Nitrite (NO₂). It is estimated that a facility achieving a TKN limit of 3.0 mg/L essentially removes ammonia from the waste stream, resulting in a 'self-sustaining' quality effluent that protects against ammonia toxicity.

It is staff's best professional judgement that a TKN monthly average limit of 3.0 mg/L is still protective given the aforementioned and will be carried forward in this reissuance. The weekly average limit will be 4.5 mg/L based on a multiplier of 1.5 times the monthly average.

2). Total Residual Chlorine:

This facility utilizes ultraviolet (UV) light for disinfection; therefore, chlorine limitations are not warranted.

3). Metals:

It was ascertained that limits for Zinc are still warranted; therefore, quarterly monitoring will be carried forward with this reissuance.

It was also determined that no limits were needed for Copper. However, 9VAC25-31-220.L (Antibacksliding) does not allow for less stringent effluent limitations than those in the previous permit except under specific circumstances; such as, substantial alterations to the permitted facility. Therefore, after the plant upgrades are complete and monitoring data indicates that Copper levels remain at current concentrations; staff may consider removing the monitoring requirement during the next reissuance.

The facility shall continue monitoring for Copper on an annual basis during this permit term.

See **Attachment 8** for limit determinations.

d. Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to carbonaceous-Biochemical Oxygen Demand-5 day (cBOD₅), Total Suspended Solids (TSS), Total Kjeldahl Nitrogen (TKN) and pH limitations are proposed.

The minimum monthly average for Dissolved Oxygen (D.O.) was changed with this reissuance to reflect the current VPDES Permit Manual regarding limitations for swamp and marsh waters.

cBOD₅, TSS, Dissolved Oxygen and TKN limitations are based on best professional judgement and Guidance Memo 00-2011. This guidance is applicable to waters such as this portion of Polecat Creek where conditions are indicative of marsh waters and cannot be modeled.

It is staff's practice to equate the Total Suspended Solids limits with the cBOD₅ limits since the two pollutants are closely related in terms of treatment of domestic sewage.

pH limitations are set at the water quality criteria.

E. coli limitations are in accordance with the Water Quality Standards 9VAC25-260-170.

e. Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients and Total Suspended Solids for Chesapeake Bay Requirements

VPDES Regulation 9VAC25-31-220(D) requires effluent limitations that are protective of both the numerical and narrative water quality standards for state waters, including the Chesapeake Bay.

As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries.

Technology-based effluent concentration limits are included in the individual VPDES permit when the facility installs nutrient removal capability. The basis for the limitations is 9VAC25-40 – *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed* which requires new or expanding discharges with design flows of ≥ 0.04 MGD to treat for TN and TP to either BNR levels (TN = 8.0 mg/L; TP = 1.0 mg/L) or SOA levels (TN = 3.0 mg/L and TP = 0.30 mg/L).

This facility has also obtained coverage under 9VAC25-820 – *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia*. This regulation specifies and controls the nitrogen and phosphorus loadings from facilities and specifies facilities that must register under the general permit. Nutrient loadings for those facilities registered under the general permit as well as compliance schedules and other permit requirements shall be authorized, monitored, limited and otherwise regulated under the general permit and not this individual permit. This facility has coverage under this General Permit; the permit number is VAN030045.

Total Nitrogen and Total Phosphorus Annual Loads from this facility are found in 9VAC25-720 – *Water Quality Management Plan Regulation* that sets forth TN and TP maximum wasteload allocations for facilities designated as significant discharges. Those allocations for this facility are based on the current 0.5 MGD plant. The permittee will be required to maintain current nutrient loading allocations originally established for the 0.5 MGD facility when the design flow is increased to 1.5 MGD and 3.0 MGD.

The proposed annual concentration limit averages for TN at 3.0 mg/L and TP at 0.20 mg/L are based on 9VAC25-40 and GM07-2008. The facility will exceed the aforementioned allocations at a flow of 1.0 MGD. Therefore, it is staff's best professional judgement that the permittee be required to submit an updated offset plan for both TN and TP to DEQ for approval upon reaching a monthly average flow of 0.95 MGD (95% of 1.0 MGD) for three (3) consecutive months. The permittee will also be required to submit a subsequent offset plan for both TN and TP upon application for a Certificate to Construct (CTC) for the 3.0 MGD facility. The plans shall demonstrate the steps necessary in order to maintain compliance the WLAs.

Monitoring for Nitrates + Nitrites, Total Nitrogen and Total Phosphorus are included in this permit at the 1.5 MGD and 3.0 MGD expanded flows. The monitoring is needed to ensure protection of the Water Quality Standards of the Chesapeake Bay. Monitoring frequencies reflect those as set forth in 9VAC25-820. Annual average effluent concentration limitations, as well as monthly and year to date calculations for Total Nitrogen (TN) and Total Phosphorus (TP) are included in this individual permit at the expanded design flows.

It is also staff's best professional judgment that a monthly Total Phosphorus limitation of 2.0 mg/L remains in this reissuance to ensure that algal blooms are controlled at the 0.50 MGD design flow. It is staff's experience that STP discharges without Phosphorus controls will cause algal blooms in ponds, small impoundments and still waters in general. Since there is no model or chlorophyll criteria by which to derive a Phosphorus limit, staff will use their experience with facilities that must comply with the 2.0 mg/L requirements of the Nutrient Policy and require the same limit. This limit has been shown to provide sufficient Phosphorus control to avoid nuisance algal blooms. The regulatory basis for this approach is 9VAC25-31-220.D.

The monthly Total Phosphorus limitation of 2.0 mg/L is proposed to be removed at the 1.5 MGD and 3.0 MGD design flows. Since the facility is currently under construction and should be designing to meet annual averages of < 0.20 mg/L for Total Phosphorus at the expanded flows, it is staff's best professional judgement that the above monthly average of 2.0 mg/L for Total Phosphorus can be removed at the expanded design flows.

With regard to total suspended solids effluent limits, the proposed permit is consistent with Chesapeake Bay TMDL and Virginia's Watershed Implementation Plan (WIP). Although the Bay TMDL established WLAs for each WWTP based on 30 mg/L for TSS at design flow, actual TSS permit limitations for facilities in Virginia are often more stringent than 30 mg/L. The Phase I WIP (approved by EPA) recognizes this fact and allows for aggregation of individual VPDES permitted TSS loads to determine compliance with the Bay TMDL. Under the WIP, TSS loads for individual VPDES permits are considered consistent with the Bay TMDL provided the Virginia aggregated permitted TSS load is less than the aggregated Bay TMDL TSS allocation for permits identified in Appendix Q. This proposed permit with a TSS limitation of 10 mg/L and an increased designed flow of 3.0 MGD is offset by other facilities with limitations more stringent than 30 mg/L. The proposed permit will not cause the aggregated Bay TMDL TSS allocation for individual VPDES permits identified in Appendix Q to be exceeded.

f. Effluent Limitations and Monitoring Summary

The effluent limitations are presented in the following table. Limits were established for cBOD₅, Total Suspended Solids, Total Kjeldahl Nitrogen, pH, Dissolved Oxygen, *E. coli*, Nitrate+Nitrite, as N, Total Nitrogen, Total Phosphorus, Total Recoverable Copper and Total Recoverable Zinc.

The limit for Total Suspended Solids is based on Best Professional Judgement.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and then a conversion factor of 3.785.

The mass loading (lb/d) for TKN monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and then a conversion factor of 8.3438.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual and 9VAC25-820.

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for cBOD and TSS (or 65% for equivalent to secondary). The limits in this permit are water quality-based effluent limits and result in greater than 85% removal.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

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19a. Effluent Limitations/Monitoring Requirements:

Design flow is 0.50 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until issuance of the CTO for the 1.5 MGD facility or the permit's expiration date, whichever comes first.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
		Monthly Average		Weekly Average		Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL		NA		NA	NL	Continuous	TIRE
pH	3	NA		NA		6.0 S.U.	9.0 S.U.	1/D	Grab
cBOD ₅	3,4	10 mg/L	19 kg/day	15 mg/L	28 kg/day	NA	NA	3D/W	8H-C
Total Suspended Solids (TSS)	2,4	10 mg/L	19 kg/day	15 mg/L	28 kg/day	NA	NA	3D/W	8H-C
Dissolved Oxygen (DO)	3	NA		NA		5.0 mg/L	NA	1/D	Grab
Total Kjeldahl Nitrogen (TKN)	2,3,4	3.0 mg/L	13 lb/day	4.5 mg/L	19 lb/day	NA	NA	3D/W	8H-C
<i>E. coli</i> (Geometric Mean) ^(a)	3	126 n/100 mL		NA		NA	NA	3D/W	Grab
Total Phosphorus	2,4	2.0 mg/L		NA		NA	NA	1/2W	8H-C
Copper, Total Recoverable	2,3	20 µg/L		NA		NA	NA	1/Y	Grab
Zinc, Total Recoverable ^(b)	3	110 µg/L		NA		NA	NA	1/Q	Grab
Chronic Toxicity – <i>C. dubia</i> (TU _c) ^(c)		NA		NA		NA	NL	1/Y	8H-C
Chronic Toxicity – <i>P. promelas</i> (TU _c) ^(c)		NA		NA		NA	NL	1/Y	8H-C

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards
4. Current VPDES Permit Manual

MGD = Million gallons per day.

NA = Not applicable.

NL = No limit; monitor and report.

S.U. = Standard units.

TIRE = Totalizing, indicating and recording equipment.

1/D = Once every day.

3D/W = Three days a week.

1/2W = Once every 2 weeks.

1/Q = Once every calendar quarter.

1/Y = Once every calendar year.

8H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the monitored 8-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of eight (8) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum eight (8) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by 10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

^(a) Samples shall be collected between the hours of 10 A.M. and 4 P.M.

^(b) The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

^(c) See Section 20.c. for the Whole Effluent Toxicity Program.

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19b. Effluent Limitations/Monitoring Requirements:

Design flow is 1.5 MGD.

Effective Dates: During the period beginning with the issuance of the CTO for the 1.5 MGD facility and lasting until issuance of the CTO for the 3.0 MGD facility or the permit's expiration date, whichever comes first.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
		Monthly Average		Weekly Average		Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL		NA		NA	NL	Continuous	TIRE
pH	3	NA		NA		6.0 S.U.	9.0 S.U.	1/D	Grab
cBOD ₅	3,4	10 mg/L	57 kg/day	15 mg/L	85 kg/day	NA	NA	5D/W	24H-C
Total Suspended Solids (TSS)	2,4	10 mg/L	57 kg/day	15 mg/L	85 kg/day	NA	NA	5D/W	24H-C
Dissolved Oxygen (DO)	3	NA		NA		5.0 mg/L	NA	1/D	Grab
Total Kjeldahl Nitrogen (TKN)	2,3,4	3.0 mg/L	38 lb/day	4.5 mg/L	56 lb/day	NA	NA	5D/W	24H-C
<i>E. coli</i> (Geometric Mean) ^(a)	3	126 n/100 mL		NA		NA	NA	5D/W	Grab
Nitrate+Nitrite, as N	3,5	NL mg/L		NA		NA	NA	1/W	24H-C
Total Nitrogen ^(b)	3,5	NL mg/L		NA		NA	NA	1/W	Calculated
Total Nitrogen – Year to Date ^(c)	3,5	NL mg/L		NA		NA	NA	1/M	Calculated
Total Nitrogen – Calendar Year ^(c)	3,5	3.0 mg/L		NA		NA	NA	1/Y	Calculated
Total Phosphorus	3,5	NL mg/L		NA		NA	NA	1/W	24H-C
Total Phosphorus – Year to Date ^(c)	3,5	NL mg/L		NA		NA	NA	1/M	Calculated
Total Phosphorus – Calendar Year ^(c)	3,5	0.20 mg/L		NA		NA	NA	1/Y	Calculated
Copper, Total Recoverable	3	20 µg/L		NA		NA	NA	1/Y	Grab
Zinc, Total Recoverable ^(d)	3	110 µg/L		NA		NA	NA	1/Q	Grab
Chronic Toxicity – <i>C. dubia</i> (TU _c) ^{(d)(e)}		NA		NA		NA	NL	1/Q	24H-C
Chronic Toxicity – <i>P. promelas</i> (TU _c) ^{(d)(e)}		NA		NA		NA	NL	1/Q	24H-C

The basis for the limitations codes are:

- | | | |
|--|--|------------------------------------|
| 1. Federal Effluent Requirements | MGD = Million gallons per day. | 1/D = Once every day. |
| 2. Best Professional Judgement | NA = Not applicable. | 5D/W = Five days a week. |
| 3. Water Quality Standards | NL = No limit; monitor and report. | 1/W = Once every week. |
| 4. Current VPDES Permit Manual | S.U. = Standard units. | 1/M = Once every month. |
| 5. 9VAC25-40 (Regulation for Nutrient Enriched Waters) | TIRE = Totalizing, indicating and recording equipment. | 1/Q = Once every calendar quarter. |
| | | 1/Y = Once every calendar year. |

24H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the monitored 24-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of twenty-four (24) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum twenty-four (24) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by 10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

^(a) Samples shall be collected between the hours of 10 A.M. and 4 P.M.

^(b) Total Nitrogen = Sum of TKN plus Nitrate+Nitrite.

^(c) See Section 20.a. for Nutrient Calculations.

^(d) The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

^(e) See Section 20.c. for the Whole Effluent Toxicity Program.

VPDES PERMIT PROGRAM FACT SHEET

VA0073504
PAGE 11 of 14

19c. Effluent Limitations/Monitoring Requirements:

Design flow is 3.0 MGD.

Effective Dates: During the period beginning with the issuance of the CTO for the 3.0 MGD facility and lasting until the permit's expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
		Monthly Average		Weekly Average		Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL		NA		NA	NL	Continuous	TIRE
pH	3	NA		NA		6.0 S.U.	9.0 S.U.	1/D	Grab
cBOD ₅	3,4	10 mg/L	114 kg/day	15 mg/L	170 kg/day	NA	NA	5D/W	24H-C
Total Suspended Solids (TSS)	2,4	10 mg/L	114 kg/day	15 mg/L	170 kg/day	NA	NA	5D/W	24H-C
Dissolved Oxygen (DO)	3	NA		NA		5.0 mg/L	NA	1/D	Grab
Total Kjeldahl Nitrogen (TKN)	3,4	3.0 mg/L	75 lb/day	4.5 mg/L	113 lb/day	NA	NA	5D/W	24H-C
<i>E. coli</i> (Geometric Mean) ^(a)	3	126 n/100 mL		NA		NA	NA	1/D	Grab
Nitrate+Nitrite, as N	3,5	NL mg/L		NA		NA	NA	1/W	24H-C
Total Nitrogen ^(b)	3,5	NL mg/L		NA		NA	NA	1/W	Calculated
Total Nitrogen – Year to Date ^(c)	3,5	NL mg/L		NA		NA	NA	1/M	Calculated
Total Nitrogen – Calendar Year ^(c)	3,5	3.0 mg/L		NA		NA	NA	1/Y	Calculated
Total Phosphorus	3,5	NL mg/L		NA		NA	NA	1/W	24H-C
Total Phosphorus – Year to Date ^(c)	3,5	NL mg/L		NA		NA	NA	1/M	Calculated
Total Phosphorus – Calendar Year ^(c)	3,5	0.20 mg/L		NA		NA	NA	1/Y	Calculated
Copper, Total Recoverable	3	20 µg/L		NA		NA	NA	1/Y	Grab
Zinc, Total Recoverable ^(d)	3	110 µg/L		NA		NA	NA	1/Q	Grab
Chronic Toxicity – <i>C. dubia</i> (TU _c) ^{(d)(e)}		NA		NA		NA	NL	1/Q	24H-C
Chronic Toxicity – <i>P. promelas</i> (TU _c) ^{(d)(e)}		NA		NA		NA	NL	1/Q	24H-C

The basis for the limitations codes are:

- | | | |
|--|--|------------------------------------|
| 1. Federal Effluent Requirements | MGD = Million gallons per day. | 1/D = Once every day. |
| 2. Best Professional Judgement | NA = Not applicable. | 5D/W = Five days a week. |
| 3. Water Quality Standards | NL = No limit; monitor and report. | 1/W = Once every week. |
| 4. Current VPDES Permit Manual | S.U. = Standard units. | 1/M = Once every month. |
| 5. 9VAC25-40 (Regulation for Nutrient Enriched Waters) | TIRE = Totalizing, indicating and recording equipment. | 1/Q = Once every calendar quarter. |
| | | 1/Y = Once every calendar year. |

24H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the monitored 24-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of twenty-four (24) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum twenty-four (24) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by 10% or more during the monitored discharge.

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^(c) See Section 20.a. for Nutrient Calculations.

^(d) The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

^(e) See Section 20.c. for the Whole Effluent Toxicity Program.

20. Other Permit Requirements:

- a. Permit Section Part I.B. contains quantification levels and compliance reporting instructions.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

The calculations for the Nitrogen and Phosphorus parameters shall be in accordance with the calculations set forth in 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia*. §62.1-44.19:13 of the Code of Virginia define how annual nutrient loads are to be calculated; this is carried forward in 9VAC25-820-70. As annual concentrations (as opposed to loads) are limited in the individual permit, these reporting calculations are intended to reconcile the reporting calculations between the permit programs, as the permittee is collecting a single set of samples for the purpose of ascertaining compliance with two permits.

- b. Permit Section Part I.C. details the requirements of a Pretreatment Program.

The VPDES Permit Regulation at 9VAC25-31-210 requires monitoring and 9VAC25-31-220.D. requires all discharges to protect water quality. VPDES Permit Regulation, 9VAC25-31-730 through 900. and 40 CFR Part 403 requires POTWs with a design flow of > 5 MGD and receiving from Industrial Users (IUs) pollutants which pass through or interfere with the operation of the POTW or are otherwise subject to pretreatment standards to develop a pretreatment program.

Approximately 60% of the wastewater originates from non-domestic sources (light industry) with three (3) of those sources classified as Significant Industrial Users (SIUs) pursuant to the Pretreatment Regulations, 9VAC25-31-730; a pretreatment program is warranted. The program was approved by DEQ-NRO staff on 22 January 2001.

It should be noted that one of the SIUs has applied for a discharge permit from DEQ -NRO. Once a permit is issued to this facility, the SIU will disconnect from the Caroline County Regional WWTP.

Program requirements and reporting are found in this section of the permit.

- c. Permit Section Part I.D. details the requirements for Whole Effluent Toxicity Program.

The VPDES Permit Regulation at 9VAC25-31-210 requires monitoring and 9VAC25-31-220.I, requires limitations in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. A TMP is imposed for municipal facilities with a design rate >1.0 MGD, with an approved pretreatment program or required to develop a pretreatment program, or those determined by the Board based on effluent variability, compliance history, IWC and receiving stream characteristics.

The Caroline County Regional WWTP has an approved pretreatment program and is currently expanding to 1.5 MGD; therefore, a program is warranted. Until the CTO is issued for the 1.5 MGD or 3.0 MGD facility, the treatment plant will continue with annual monitoring. Within six (6) months after issuance of the CTO for the 1.5 MGD and 3.0 MGD design flows, the facility shall initiate quarterly monitoring. The permittee shall collect a total of eight (8) quarterly samples; thereafter, annual monitoring shall commence unless quarterly test results indicate possible toxicity.

See **Attachment 9** for summary of previous test results.

21. Other Special Conditions:

- a. 95% Capacity Reopener. The VPDES Permit Regulation at 9VAC25-31-200.B.4. requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW.
- b. Indirect Dischargers. Required by VPDES Permit Regulation, 9VAC25-31-200 B.1. and B.2. for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

- c. O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. The permittee shall maintain a current Operations and Maintenance (O&M) Manual. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M Manual available to Department personnel for review upon request. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.
 - d. CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.
 - e. Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200.C., and Rules and Regulations for Waterworks and Wastewater Works Operators (18VAC160-20-10 et seq.) requires licensure of operators.
 - This facility requires a Class II operator for the 0.50 MGD and 1.5 MGD design flows.
 - This facility will require a Class I operator for the 3.0 MGD design flow.
 - f. Reliability Class. The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet reliability Class I.
 - g. Sludge Reopener. The VPDES Permit Regulation at 9VAC25-31-220.C. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.
 - h. Sludge Use and Disposal. The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2., and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.
 - i. Nutrient Offsets. The Virginia General Assembly, in their 2005 session, enacted Article 4.02 (Chesapeake Bay Watershed Nutrient Credit Exchange Program) to the Code of Virginia to address nutrient loads to the Bay. Section 62.1-44.19:15 sets forth the requirements for new and expanded dischargers, which are captured by the requirements of the law, including the requirement that non-point load reductions acquired for the purpose of offsetting nutrient discharges be enforced through the individual VPDES permit.
 - j. E3/E4. 9VAC25-40-70.B. authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.
 - k. Nutrient Reopener. 9VAC25-40-70.A. authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9VAC25-31-390.A. authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.
 - l. TMDL Reopener. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL that may be developed and approved for the receiving stream.
22. Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.
23. **Changes to the Permit from the Previously Issued Permit:**
- a. Special Conditions:
 - The Nutrient Reopener was added with this reissuance.
 - The Reuse Regulations Reopener was removed with this reissuance since it is no longer valid.
 - The Water Quality Criteria Reopener was removed with this reissuance.

b. Monitoring and Effluent Limitations:

- The 0.75 MGD rerating was removed with this reissuance.
- Dissolved Oxygen minimum limit was changed from 3.0 mg/L to 5.0 mg/L to reflect the current VPDES Permit Manual.
- Total Phosphorus limits were changed from 0.50 mg/L to 0.30 mg/L at the 1.5 MGD design flow to reflect agency guidance.
- The monitoring frequency for chronic toxicity at the expanded flows was changed to 1/Q to reflect agency guidance.
- The reporting requirement for the phosphorus monthly average loading was removed with this reissuance.

c. Other:

- The permit status for this facility was changed from minor to major due to the expansion flow tiers and the approved pre-treatment program per the current VPDES Permit Manual.
- The drainage area and river mile information was updated based on the Planning Statement.
- The facility address was updated.

24. Variances/Alternate Limits or Conditions: Not applicable**25. Public Notice Information:**

First Public Notice Date: TBD 2012 Second Public Notice Date: TBD 2012

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193; Telephone No. (703) 583-3873; Douglas.Frasier@deq.virginia.gov. See **Attachment 10** for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action and may request a public hearing during the comment period. Comments shall include the name, address and telephone number of the writer and of all persons represented by the commenter/requester and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

26. 303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):

Polecat Creek has been listed as impaired for the Aquatic Life Use due to excursions for dissolved oxygen and pH with TMDLs expected in 2022 and 2016, respectively. If it is determined that the impairments are due to natural conditions, the TMDLs will not be required.

27. Additional Comments:

Previous Board Action(s): Not Applicable.

Staff Comments: No comments were received.

Public Comment: No comments were received during the public notice.

EPA Checklist: The checklist can be found in **Attachment 11**.

Fact Sheet Attachments

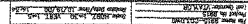
Table of Contents

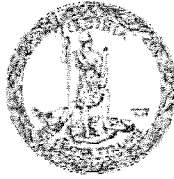
Caroline County Regional Wastewater Treatment Plant
VA0073504
2012 Reissuance

Attachment 1	Facility Schematic/Diagram
Attachment 2	Certificate to Construct for 1.5 MGD facility
Attachment 3	Topographic Map
Attachment 4	Technical Inspection Summary
Attachment 5	Planning Statement
Attachment 6	Water Quality Criteria
Attachment 7	Ammonia Limitation Derivation
Attachment 8	Metal Limitation Derivations
Attachment 9	Whole Effluent Toxicity Test Summary
Attachment 10	Public Notice
Attachment 11	EPA Checklist

1. ALL NEW PIPING SHALL BE INSTALLED WITH MIN. 3" OF COVER, UNLESS SHOWN OTHERWISE ON PLANS.
2. RUN NEW ALUM. & MAG. HOT. PIPES TO EXIST. GRT REMOVAL UNIT EFFLUENT CHANNEL. PIPING TO RUN UP OVER WALL, PROVIDE BALL VALVE, EL. DOWN & TERMINATE AT ELEVATION 124.5.
3. PIPING TO BE INSTALLED, HEAT TRACED & INSULATED FROM GRADE TO WHERE PIPING TURNS DOWN INTO TROUGH. UTILIZE EXIST. ELECTRICAL SERVICE FOR NEW HEAT TRACING.

- [illegible]

[illegible]



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE

13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3821

www.deq.virginia.gov

Douglas W. Domenech
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

July 27, 2011

Caroline County
Caroline Co Regional WWTP Expansion and
Upgrade
PTL#25326, VA0073504

Mr. Joseph Schiebel
Director, Caroline Co Dept of Public Utilities
233 W. Broadus Ave
PO Box 424
Bowling Green, VA 22427

Dear Mr. Schiebel:

In accordance with the Code of Virginia, Title 62.1, Section 62.1-44.19, attached please find the Certificate to Construct (CTC) for this project. This CTC is being issued based on the Application for Certificate to Construct dated June 29, 2011, and received by this office on July 11, 2011.

Receipt of this CTC does not relieve any owner of the responsibility to comply with any other applicable statutes or regulations, including local ordinances and zoning requirements.

Please be advised that a Certificate to Operate (CTO) is required by the Code before placing the system in operation. Application for the CTO can be found at the DEQ website:
<http://www.deq.virginia.gov/wastewater/MunicipalNonWOIFProcedures032010>.

If you have any questions about this letter or the approval process, please contact me at (703)-583-3834 or alison.thompson@deq.virginia.gov.

Respectfully,

Alison Thompson
Water Permits Technical Reviewer

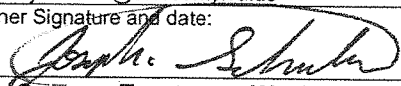
cc: VA0073504 Permit File
VDH District Office, attn: Environmental Health Manager
Caroline County Building Official
Wade Tanner, Reid Engineering Company, 1210 Princess Anne St, Fredericksburg, VA 22401

Attachment: CTC

**Virginia Department of Environmental Quality
APPLICATION for CERTIFICATE TO CONSTRUCT (CTC)**

For Municipal Sewage Collection, Treatment, and/or Reclamation Systems

See Instructions. Do not submit plans and specifications. Submit 1 copy of this form with all attachments. Form will expand as you enter information.

Project Title: (as it appears on plans) FER: Caroline County Regional Wastewater Treatment Plant Expansion and Upgrade – Upper Polecat Creek Facility	
P.E. Seal Date on Cover: Wade Tanner, PE, June 29, 2011	
Specifications Title and Date: N/A	
Location of Project: Caroline County	County/City: Caroline County
Receiving Wastewater Collection System(s): n/a	
Receiving Sewage Treatment Plant(s)/Reclamation System: Upper Polecat Creek Wastewater Treatment Plant	
PROJECT OWNER: Caroline County	PROJECT ENGINEER
Owner Contact Name: Joseph Schiebel	Name: Wade Tanner
Title: Director, Dept of Public Utilities	Company Name: Reid Engineering Company
Address: 233 W. Broadus Ave PO Box 424 Bowling Green, VA 22427	Address: 1210 Princess Anne Street Fredericksburg, VA 22401
Phone: 804-633-4390	Phone: 540-371-8500
Email: jschiebel@co.county.va.us	Email: wtanner@reidengineering.com
Owner Signature and date: 	

For Sewage Treatment Works and Sewage Collection Systems:

Attach Project Description

Attach Letter(s) of Acceptance from Receiving Facility/Utility for sewage collection system projects

Attach Reliability Class: (1) For Pump Stations attach Reliability Class Worksheet. (2) For Sewage Treatment Plants note the Reliability Class rating from the VPDES or VPA permit and method of meeting reliability classification requirements.

For a sewage treatment plant project, provide the VPDES or VPA permit number: 0073504

Design Sewage Flow (Sewage Plant): (a) average daily flow (MGD): 1.5 (b) peak daily flow (MGD): 3.0

Design Sewage Flow (Pump Station): (a) average daily flow (MGD): _____ (b) peak hour flow (MGD): _____

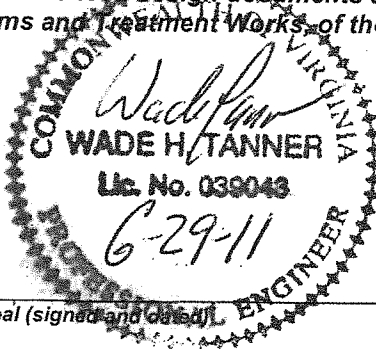
Please check the appropriate components of your project:

Gravity and/or Vacuum Sewer	<input type="checkbox"/>	New Sewage Treatment Plant.....	<input type="checkbox"/>
Pump Station(s).....	<input type="checkbox"/>	Modification of Existing Sewage Treatment Plant	<input checked="" type="checkbox"/>
Force Main(s)	<input type="checkbox"/>	Expansion of Existing Sewage Treatment Plant	<input checked="" type="checkbox"/>

For Reclamation or Satellite Reclamation System, Attach Page 2: Page 2 Attached? Yes ☐ No ☐

The following statement must be signed and sealed by the Virginia licensed design engineer:

"As discussed in 9 VAC 25-790-240.C., the referenced design documents are in substantial compliance with Part III - Manual of Practice For Sewerage Systems and Treatment Works of the Sewage Collection and Treatment Regulations (9 VAC 25-790-310 et seq.)"

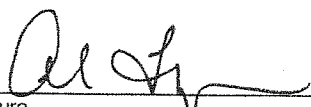


Licensed Design Engineer's Signature and original seal (signed and sealed)

☐ Design exceptions and justifications are attached in accordance with 9 VAC 25-790-240.C.

For DEQ use only:

In accordance with the Code of Virginia 1950, as amended, Title 62.1, Section 62.1-44.19, this form, signed by the appropriate DEQ representative, constitutes your Certificate to Construct. This Certificate is valid for a period of five years from the date of issuance. Other permits and authorizations may be necessary. Please contact your Regional DEQ Office if you have any questions.

<u>Alison Thompson</u>	<u></u>	<u>7/27/11</u>	<u>25326</u>
Name	Signature	Date	CTC PTL Number

Department of Environmental Quality Authorized Representative

Note: Once the project is complete, an application for a Certificate to Operate must be submitted to the appropriate DEQ Regional office.

REID ENGINEERING COMPANY, INC.

1210 Princess Anne Street
Fredericksburg, VA 22401

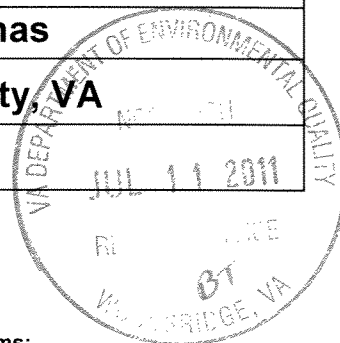
Tele: 540/371-8500 Fax: 540/371-8576
e-mail: wtanner@reidengineering.com

Protecting the Environment and Your
Investment in Pollution Control

LETTER OF TRANSMITTAL

DATE: July 8, 2011

JOB NO.: CR01a

TO: **Mr. Bryant Thomas**RE: **Caroline County, VA****Virginia DEQ**

WE ARE SENDING YOU:

Attached

Under separate cover via ___ the following items:

Drawings

Prints

Plans

Samples

Specifications

Copy of Letter

Change Order

Submittal

COPIES	DATE	No.	DESCRIPTION
1	7/8/11		Certificate to Construct

THESE ARE TRANSMITTED as check below:

For approval

Approved as Submitted

Resubmit ___ copies for approval

For your Use

Approved as Noted

Submit ___ copies for distribution

Change Order

Returned for corrections

Return ___ corrected prints

For review and comment

FOR BIDS DUE _____ 20__

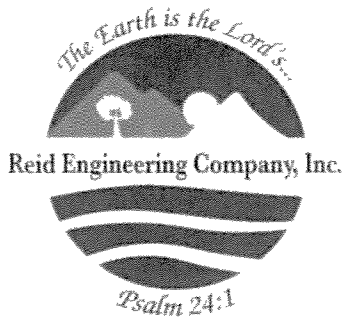
PRINTS RETURNED AFTER LOAN TO US

REMARKS:

Please call if you have any questions.

COPY: File

SIGNATURE: **Wade Tanner, P.E. / rs**



Reid Engineering Company, Inc.

Environmental and Civil Engineering Consultants

• Wastewater • Water /Sewer • Reuse

1210 Princess Anne Street | Fredericksburg, Virginia 22401

540-371-8500 | www.reidengineering.com

July 7, 2011

Mr. Bryant Thomas
Water Permits Division
Virginia Department of Environmental Quality (DEQ)
13901 Crown Court
Woodbridge, VA 22193

**SUBJECT: CERTIFICATE TO CONSTRUCT (CTC) for CAROLINE COUNTY
WASTEWATER TREATMENT PLANT EXPANSION & UPGRADE-
UPPER POLECAT CREEK FACILITY**

Dear Mr. Bryant:

On behalf of Caroline County, Reid Engineering Company, has prepared the Application for Certificate to Construct (CTC) for the Expansion and Upgrade to the existing Upper Polecat Creek Wastewater Treatment Facility. The existing discharge permit number for the facility is VA 0073504. The existing WWTP is has a design capacity of 0.50 MGD and Caroline County desires to expand the treatment capacity to 1.50 MGD with this application. The project is a design build PPEA project and we request for CTC approval based on the preparation of a Final Engineering Report "FER" dated June 29, 2011.

To expand the wastewater treatment capacity from 0.50 MGD to 1.50 MGD and comply with the requirements of the existing permit, a new five-stage Bardenpho activated sludge treatment process followed by tertiary denitrification filters and UV disinfection is proposed with this application.

Please find the enclosed information for your use to obtain approval of the CTC for the project:

- Application for Certificate to Construct (CTC)
- Project Description
- Reliability Classification Requirements

If you have questions or need additional information please let our office know at your earliest convenience. You may contact me at 540-371-8500.

Sincerely,

A handwritten signature in cursive script, appearing to read "Wade Tanner", with a long horizontal flourish extending to the right.

Wade Tanner
Project Manager

cc: Joey Schiebel, Caroline County (electronic)
Mike Baldwin, MEB (electronic)



Reid Engineering Company, Inc.

Environmental and Civil Engineering Consultants

• Wastewater • Water /Sewer • Reuse

1210 Princess Anne Street | Fredericksburg, Virginia 22401

540-371-8500 | www.reidengineering.com

CTC APPLICATION ATTACHMENT **CAROLINE COUNTY WASTEWATER TREATMENT PLANT EXPANSION &** **UPGRADE – UPPER POLECAT CREEK FACILITY**

PROJECT DESCRIPTION:

The existing Caroline County Regional Wastewater Treatment Plant (CCRWTP) is permitted for a flow capacities from 500,000 gallons/day up to 3,000,000 gallons/day under discharge permit #VA0073504. The existing Wastewater Treatment Plant has a design capacity of 500,000 gallons/day. The County desires to expand the capacity of this wastewater treatment plant to 1.5 MGD initially and ultimately to 3.0 MGD. Permit limits for Annual Total Nitrogen (TN) and Total Phosphorus (TP) were included in the discharge permit issued by the Virginia DEQ effective June 18, 2007 through June 17, 2012. The new Annual TN and TP Allocation Limits are part of the Chesapeake Bay nutrient reduction initiative.

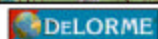
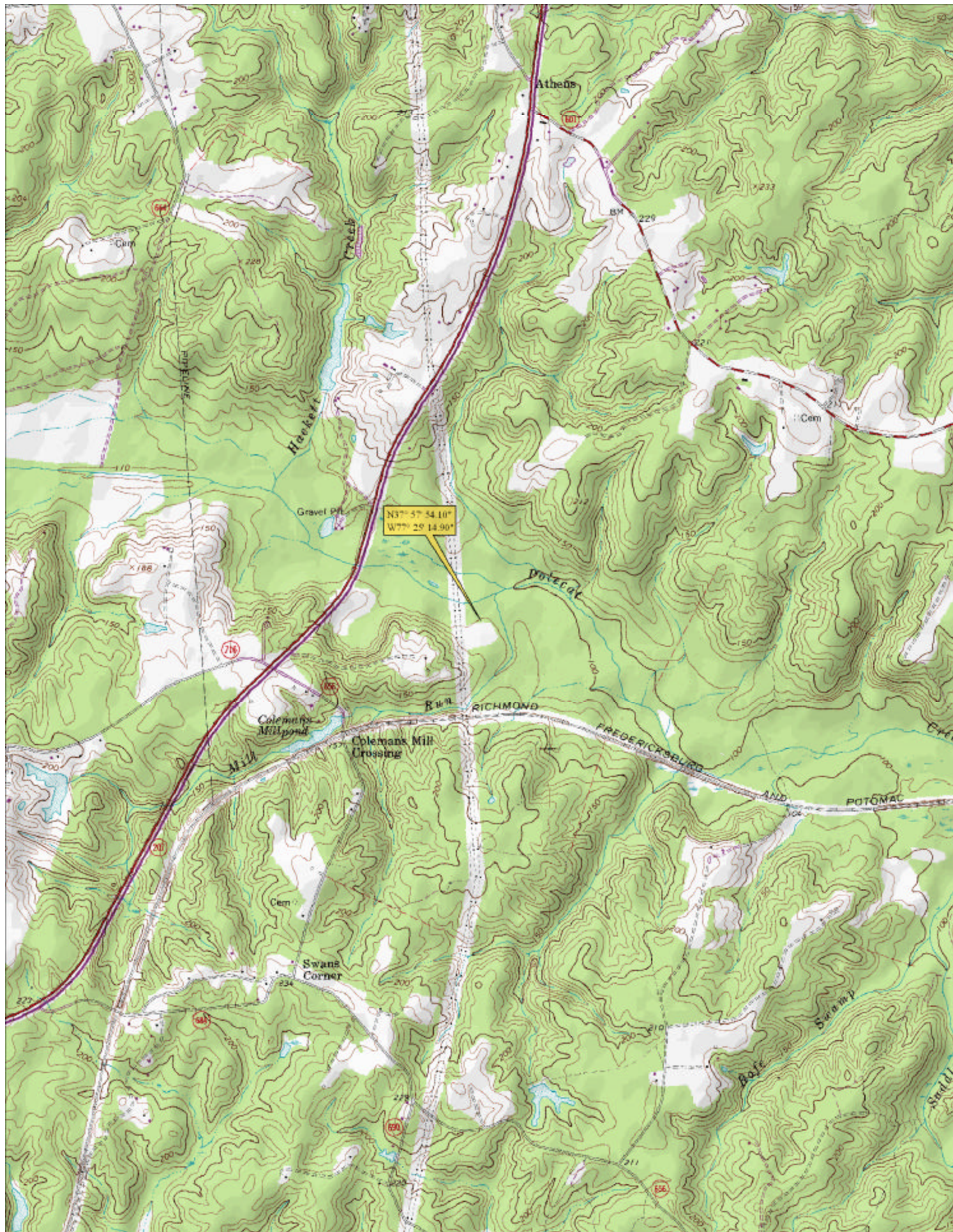
The CCRWTP is located at 22101 Rogers Clark Boulevard, Ruther Glen, Virginia on the existing wastewater treatment plant site and discharges directly to Polecat Creek, a tributary of the York River Basin which is part of the Chesapeake Bay Watershed. Therefore, the new CCRWTP is subject to the 9 VAC 25-720 Water Quality Management Planning Regulation which requires significant dischargers to comply with certain waste load allocations for nitrogen and phosphorus. The waste load allocations for Total Nitrogen (TN) and Total Phosphorus (TP) are 9,137 lbs/year and 1,066 lbs TP/year, respectively.

To comply with the requirements of VPDES #VA0073504 for the CCRWTP, a five-stage Bardenpho activated sludge process will be constructed. The upgraded CCRWTP will consist of the following major treatment system components:

- Raw Wastewater Pump Station
- Mechanical Screening
- Grit Removal System
- Flow Equalization Basin Anaerobic Reactor #1
- Flow Equalization Basin Anoxic Reactor #2
- Nitrification Reactors #3A & #3B
- Anoxic Reactors #4A & #4B
- Aerobic Reactors #5A & #5B
- Final Clarifiers #1 and #2
- Tertiary Denitrification Filtration System
- UV Disinfection System
- Post Aeration Cascade
- Aerobic Sludge Digestion
- Sludge Dewatering System

RELIABILITY CLASS:

The reliability classification for the existing plant is Reliability Class I. The reliability classification requirements will be satisfied by providing a dual power feed from two separate and independent power sources.



Technical Inspection Summary**Comments/Recommendations from last inspection on November 5, 2007**

- Please provide DEQ with updated connected and population served numbers. Information not received as of March 16, 2011.
-

Comments/Recommendations for Action from the Current Inspection on February 15, 2011:

- Please provide DEQ with updated connected and population served numbers. Information not received as of March 16, 2011.
- The cross connection control device was last inspected in May 2007. DEQ recommends all potable water service lines be inspected annually.
- Excessive floating debris was noted in the oxidation ditch. Debris has carried over into other unit processes (Clarifier and Sand Filter). The excessive floating debris has the potential to clog the pumps sending activated sludge into the clarifier. Photos 4 & 5
- Debris from oxidation ditch carried over into the clarifier. The clarifier effluent weirs were covered in debris and some algae. Photos 8, 9, 10 and 11. The clarifier effluent contained floating debris and was carried over into the sand filter unit.
- Wasted sludge is aerobically digested for approximately 20-30 days prior to being dewatered via a belt filter press. The facility does not digest to Class B Standards. The sludge is transported to the BFI Old Dominion Landfill located at 2001 Charles City Road, Richmond, VA for final disposal.
- Debris from aerobic digester was carried over into the dried sludge in the drying beds.
- Caroline Co. staff shall evaluate the breakdown of process control equipment to determine how debris is allowed to "pass-thru" downstream process units and end up in the dewatered sludge to the extent observed during the inspection and noted in Photo 22. This evaluation and plan of action for resolving this problem shall be reduced to a written report and submitted to DEQ-NRO staff by April 29, 2011.
- Caroline Regional staff has obtained interim certification through VELAP to analyze permit required parameters. The internal audit of the laboratory has not been conducted as of February 15, 2011.

To: Douglas Frasier
From: Jennifer Carlson

Date: January 5, 2012
Subject: Planning Statement for Caroline County Regional WWTP
Permit No: VA0073504

Discharge Type: major municipal
Discharge Flow: 0.50 MGD up to 3.0 MGD

Receiving Stream: Polecat Creek
Latitude / Longitude: 37° 57' 54.1? / 77° 25' 14.9?
Streamcode: 8-PCT
Waterbody: VAN-F20R
WQ Standards: Class III, Section 3
Rivermile: 5.92
Drainage Area: 34.3 mi²

1. Is there monitoring data for the receiving stream?

Yes, there is monitoring data for Polecat Creek. DEQ ambient monitoring station 8-PCT002.29 is located at the Route 601 bridge crossing, approximately 3.6 miles downstream of Outfall 001.

- If yes, please attach latest summary.

The following is the summary for this segment of Polecat Creek, as taken from the 2010 Integrated Report:

Class III, Section 3.

DEQ ambient monitoring stations 8-PCT002.29, at Route 601, and 8-PCT006.34, at Route 207.

Ambient monitoring finds pH and dissolved oxygen impairments, resulting in an impaired classification for the aquatic life use. The pH and dissolved oxygen excursions may be attributable to natural conditions as this segment is a low-lying Coastal Plain environment with no riffles and slow moving pools that are subject to low pH and DO. The wildlife and recreation uses are considered fully supporting. The fish consumption use was not assessed.

- If no, where is the nearest downstream monitoring station.

2. Is the receiving stream on the current 303(d) list?

Yes, Polecat Creek is listed with two impairments

- If yes, what is the impairment?

Aquatic Life Use – Dissolved Oxygen: Sufficient excursions below the minimum dissolved oxygen criterion (3 of 27 samples - 11.1%) were recorded at DEQ's ambient water quality monitoring station (8-PCT002.29) at the Route 601 crossing to assess this stream segment as not supporting the aquatic life use goal for the 2010 water quality assessment.

Aquatic Life Use – pH: Sufficient excursions below the lower limit of the pH criterion range (7 of 27 samples - 25.9%) were recorded at DEQ's ambient water quality monitoring station (8-PCT002.29) at the Route 601 crossing and (3 of 11 - 27.3%) at DEQ's ambient water quality monitoring station (8-PCT006.34) at the Route 207 crossing to assess this stream segment as not supporting the aquatic life use goal for the 2010 water quality assessment.

- Has the TMDL been prepared?

No.

- If yes, what is the WLA for the discharge?

N/A

- If no, what is the schedule for the TMDL?

The dissolved oxygen TMDL is due by 2022, and the pH TMDL is due by 2016. However, a Natural Conditions Assessment Report will be completed for Polecat Creek. The purpose of this study is to determine whether the causes of the impairments are due to the natural environment or due to anthropogenic effects. If the natural conditions are determined to be contributing to the impairment, the TMDLs will not be required.

3. If the answer to (2) above is no, is there a downstream 303(d) listed impairment? N/A

- If yes, what is the impairment? N/A

- Has a TMDL been prepared? N/A

- Will the TMDL include the receiving stream? N/A

- Is there a WLA for the discharge? N/A

- What is the schedule for the TMDL? [N/A](#)

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

[There is a completed downstream TMDL for the aquatic life use impairment for the Chesapeake Bay. However, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.](#)

5. Fact Sheet Requirements – Please provide information on other VPDES permits or VADEQ monitoring stations located within a 2 mile radius of the facility. In addition, please provide information on any drinking water intakes located within a 5 mile radius of the facility.

[There are no public water supply intakes located within a 5 mile radius of the facility.](#)

[There are no VPDES permitted facilities, and only the 2 following DEQ monitoring stations located within a 2 mile radius:](#)

[8-PCT006.34 - on Polecat Creek, about 0.5 miles upstream of Outfall 001](#)

[8-PCT007.71 - on Polecat Creek, about 1.8 miles upstream of Outfall 001](#)

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Caroline County Regional WWTP Permit No.: VA0073504 Version: OWP Guidance Memo 00-2011 (8/24/00)

Receiving Stream: Polecat Creek, UT

Stream Information			Stream Flows			Mixing Information			Effluent Information		
Mean Hardness (as CaCO3) =	0 mg/L		1Q10 (Annual) =	0 MGD		Annual - 1Q10 Mix =	0 %		Mean Hardness (as CaCO3) =	94 mg/L	
90% Temperature (Annual) =	0 deg C		7Q10 (Annual) =	0 MGD		- 7Q10 Mix =	0 %		90% Temp (Annual) =	25 deg C	
90% Temperature (Wet season) =	0 deg C		30Q10 (Annual) =	0 MGD		- 30Q10 Mix =	0 %		90% Temp (Wet season) =	15 deg C	
90% Maximum pH =	0 SU		1Q10 (Wet season) =	0 MGD		Wet Season - 1Q10 Mix =	0 %		90% Maximum pH =	7.9 SU	
10% Maximum pH =	0 SU		30Q10 (Wet season) =	0 MGD		- 30Q10 Mix =	0 %		10% Maximum pH =	7.6 SU	
Tier Designation (1 or 2) =	1		30Q5 =	0 MGD					Discharge Flow =	3 MGD	
Public Water Supply (PWS) Y/N? =	n		Harmonic Mean =	0 MGD							
Trout Present Y/N? =	n										
Early Life Stages Present Y/N? =	y										

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Acenaphthene	5	-	-	na	9.9E+02	-	-	na	9.9E+02	-	-	na	9.9E+02	-	-	na
Acrolein	0	-	-	na	9.3E+00	-	-	na	9.3E+00	-	-	na	9.3E+00	-	-	na
Acrylonitrile ^c	0	-	-	na	2.5E+00	-	-	na	2.5E+00	-	-	na	2.5E+00	-	-	na
Aldrin ^c	0	3.0E+00	-	na	5.0E-04	3.0E+00	-	na	5.0E-04	-	-	na	5.0E-04	3.0E+00	-	na
Ammonia-N (mg/l)	0	1.01E+01	1.42E+00	na	-	1.01E+01	1.42E+00	na	-	-	-	na	-	1.01E+01	1.42E+00	na
Ammonia-N (mg/l) (High Flow)	0	1.01E+01	2.71E+00	na	-	1.01E+01	2.71E+00	na	-	-	-	na	-	1.01E+01	2.71E+00	na
Anthracene	0	-	-	na	4.0E+04	-	-	na	4.0E+04	-	-	na	4.0E+04	-	-	na
Antimony	0	-	-	na	6.4E+02	-	-	na	6.4E+02	-	-	na	6.4E+02	-	-	na
Arsenic	0	3.4E+02	1.5E+02	na	-	3.4E+02	1.5E+02	na	-	-	-	na	-	3.4E+02	1.5E+02	na
Barium	0	-	-	na	-	-	-	na	-	-	-	na	-	-	-	na
Benzene ^c	0	-	-	na	5.1E+02	-	-	na	5.1E+02	-	-	na	5.1E+02	-	-	na
Benzidine ^c	0	-	-	na	2.0E-03	-	-	na	2.0E-03	-	-	na	2.0E-03	-	-	na
Benzo (a) anthracene ^c	0	-	-	na	1.8E-01	-	-	na	1.8E-01	-	-	na	1.8E-01	-	-	na
Benzo (b) fluoranthene ^c	0	-	-	na	1.8E-01	-	-	na	1.8E-01	-	-	na	1.8E-01	-	-	na
Benzo (k) fluoranthene ^c	0	-	-	na	1.8E-01	-	-	na	1.8E-01	-	-	na	1.8E-01	-	-	na
Benzo (a) pyrene ^c	0	-	-	na	1.8E-01	-	-	na	1.8E-01	-	-	na	1.8E-01	-	-	na
Bis(2-Chloroethyl) Ether ^c	0	-	-	na	5.3E+00	-	-	na	5.3E+00	-	-	na	5.3E+00	-	-	na
Bis(2-Chloroisopropyl) Ether ^c	0	-	-	na	6.5E+04	-	-	na	6.5E+04	-	-	na	6.5E+04	-	-	na
Bis 2-Ethylhexyl Phthalate ^c	0	-	-	na	2.2E+01	-	-	na	2.2E+01	-	-	na	2.2E+01	-	-	na
Bromofom ^c	0	-	-	na	1.4E+03	-	-	na	1.4E+03	-	-	na	1.4E+03	-	-	na
Butylbenzylphthalate	0	-	-	na	1.9E+03	-	-	na	1.9E+03	-	-	na	1.9E+03	-	-	na
Cadmium	0	3.7E+00	1.1E+00	na	-	3.7E+00	1.1E+00	na	-	-	-	na	-	3.7E+00	1.1E+00	na
Carbon Tetrachloride ^c	0	-	-	na	1.6E+01	-	-	na	1.6E+01	-	-	na	1.6E+01	-	-	na
Chlordane ^c	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	-	-	na	8.1E-03	2.4E+00	4.3E-03	na
Chloride	0	8.6E+05	2.3E+05	na	-	8.6E+05	2.3E+05	na	-	-	-	na	-	8.6E+05	2.3E+05	na
TRC	0	1.9E+01	1.1E+01	na	-	1.9E+01	1.1E+01	na	-	-	-	na	-	1.9E+01	1.1E+01	na
Chlorobenzene	0	-	-	na	1.6E+03	-	-	na	1.6E+03	-	-	na	1.6E+03	-	-	na

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorobromomethane ^c	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	5.4E+02	7.0E+01	na	--	5.4E+02	7.0E+01	na	--	--	--	--	--	--	--	--	--	5.4E+02	7.0E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene ^c	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	na	1.8E-02
Copper	0	1.3E+01	8.5E+00	na	--	1.3E+01	8.5E+00	na	--	--	--	--	--	--	--	--	--	1.3E+01	8.5E+00	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	1.6E+04
DDD ^c	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	na	3.1E-03
DDE ^c	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	na	2.2E-03
DDT ^c	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	2.2E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	1.7E-01	1.7E-01	na	--
Dibenz(a,h)anthracene ^c	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	na	1.9E+02
3,3-Dichlorobenzidine ^c	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	na	2.8E-01
Dichlorobromomethane ^c	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	na	1.7E+02
1,2-Dichloroethane ^c	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	na	7.1E+03
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane ^c	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
1,3-Dichloropropene ^c	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	na	2.1E+02
Dieldrin ^c	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	5.4E-04
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	na	4.4E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	na	8.5E+02
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
2,4-Dinitrotoluene ^c	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	na	3.4E+01
Dioxin 2,3,7,8-	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	na	5.1E-08
1,2-Diphenylhydrazine ^c	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	na	2.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	6.0E-02
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	na	3.0E-01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor ^c	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	7.9E-04
Heptachlor Epoxide ^c	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	3.9E-04
Hexachlorobenzene ^c	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E-03
Hexachlorobutadiene ^c	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Hexachlorocyclohexane	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E-02
Alpha-BHC ^c	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E-01
Hexachlorocyclohexane	0	--	--	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	9.5E-01	--	na	1.8E+00
Gamma-BHC ^c (Lindane)	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E+03
Hexachlorocyclopentadiene	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Hexachloroethane ^c	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Hydrogen Sulfide	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Indeno (1,2,3-cd) pyrene ^c	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Iron	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
Isophorone ^c	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Kepon	0	1.1E+02	1.2E+01	na	--	1.1E+02	1.2E+01	na	--	--	--	--	--	--	--	--	--	1.1E+02	1.2E+01	na	--
Lead	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Malathion	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Manganese	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	--	--
Mercury	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Methyl Bromide	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
Methylene Chloride ^c	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Methoxychlor	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Mirex	0	1.7E+02	1.9E+01	na	4.6E+03	1.7E+02	1.9E+01	na	4.6E+03	--	--	--	--	--	--	--	--	1.7E+02	1.9E+01	na	4.6E+03
Nickel	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrate (as N)	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E+02
Nitrobenzene	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
N-Nitrosodimethylamine ^c	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodiphenylamine ^c	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E+00
N-Nitrosodi-n-propylamine ^c	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	6.6E+00	na	--
Nonylphenol	0	6.5E-02	1.3E-02	na	6.4E-04	6.5E-02	1.3E-02	na	6.4E-04	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
Parathion	0	--	1.4E-02	na	3.0E+01	--	1.4E-02	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
PCB Total ^c	0	1.6E+01	1.2E+01	na	8.6E+05	1.6E+01	1.2E+01	na	8.6E+05	--	--	--	--	--	--	--	--	1.6E+01	1.2E+01	na	8.6E+05
Pentachlorophenol ^c	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Phenol	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Pyrene	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	2.0E+01	5.0E+00	na
Silver	0	3.1E+00	--	na	--	3.1E+00	--	na	--	--	--	--	--	3.1E+00	--	na
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
1,1,2,2-Tetrachloroethane ^c	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	na
Tetrachloroethylene ^c	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	na
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	na
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	na
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
Toxaphene ^c	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	7.3E-01	2.0E-04	na
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	4.6E-01	7.2E-02	na
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	na
1,1,2-Trichloroethane ^c	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	na
Trichloroethylene ^c	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	na
2,4,6-Trichlorophenol ^c	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	na
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
Vinyl Chloride ^c	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
Zinc	0	1.1E+02	1.1E+02	na	2.6E+04	1.1E+02	1.1E+02	na	2.6E+04	--	--	--	--	1.1E+02	1.1E+02	na

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	6.5E-01
Chromium III	4.2E+01
Chromium VI	6.4E+00
Copper	5.1E+00
Iron	na
Lead	7.5E+00
Manganese	na
Mercury	4.6E-01
Nickel	1.2E+01
Selenium	3.0E+00
Silver	1.2E+00
Zinc	4.4E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

2/9/2012 4:31:50 PM

Facility = Caroline County Regional WWTP

Chemical = Ammonia

Chronic averaging period = 30

WLAa = 10.1

WLAc = 1.4

Q.L. = 0.1

samples/mo. = 12

samples/wk. = 3

Summary of Statistics:

observations = 1

Expected Value = 9

Variance = 29.16

C.V. = 0.6

97th percentile daily values = 21.9007

97th percentile 4 day average = 14.9741

97th percentile 30 day average = 10.8544

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity

Maximum Daily Limit = 2.82473813078283

Average Weekly limit = 2.06613690968962

Average Monthly Limit = 1.53900194406496

The data are:

2/9/2012 4:31:06 PM

Facility = Caroline County Regional WWTP

Chemical = Cadmium

Chronic averaging period = 4

WLAa = 3.7

WLAc = 1.1

Q.L. = 0.65

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 3

Expected Value = .603036

Variance = .130915

C.V. = 0.6

97th percentile daily values = 1.46744

97th percentile 4 day average = 1.00332

97th percentile 30 day average = .727294

< Q.L. = 2

Model used = BPJ Assumptions, Type 1 data

No Limit is required for this material

The data are:

0

0

1.3

2/9/2012 4:30:11 PM

Facility = Caroline County Regional WWTP

Chemical = Copper

Chronic averaging period = 4

WLAa = 13

WLAc = 8.5

Q.L. = 1.0

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 8

Expected Value = 1.69513

Variance = 1.03445

C.V. = 0.6

97th percentile daily values = 4.12496

97th percentile 4 day average = 2.82034

97th percentile 30 day average = 2.04442

< Q.L. = 2

Model used = BPJ Assumptions, Type 1 data

No Limit is required for this material

The data are:

2.6

8.7

3.4

10

1.6

7.2

0

0

2/9/2012 4:25:01 PM

Facility = Caroline County Regional WWTP

Chemical = Nickel

Chronic averaging period = 4

WLAa = 170

WLAc = 19

Q.L. = 5

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 3

Expected Value = 7.44178

Variance = 19.9368

C.V. = 0.6

97th percentile daily values = 18.1089

97th percentile 4 day average = 12.3815

97th percentile 30 day average = 8.97518

< Q.L. = 1

Model used = BPJ Assumptions, Type 1 data

No Limit is required for this material

The data are:

6.5

0

10

2/9/2012 4:27:05 PM

Facility = Caroline County Regional WWTP

Chemical = Zinc

Chronic averaging period = 4

WLAa = 110

WLAc = 110

Q.L. = 44

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 22

Expected Value = 45.2308

Variance = 736.500

C.V. = 0.6

97th percentile daily values = 110.065

97th percentile 4 day average = 75.2547

97th percentile 30 day average = 54.5508

< Q.L. = 13

Model used = BPJ Assumptions, Type 1 data

A limit is needed based on Acute Toxicity

Maximum Daily Limit = 110

Average Weekly limit = 110

Average Monthly Limit = 110

The data are:

26

40

38

40

50

30

50

60

53

43

58

58

68

49

69

0

0

0

0

0

BIOMONITORING RESULTS

Caroline Regional Wastewater Treatment Plant (VA0073504)

Table 1
Summary of Toxicity Test Results for Outfall 001

TEST DATE	TEST TYPE/ORGANISM	IC ₂₅ (%)	48- HOUR LC ₅₀ (%)	NOEC (%)	% SURV	TU _C	REMARKS
Permit Reissued June 9, 2002							
08/06/02	Chronic <i>C. dubia</i>	17.4	>100	100 S <22.7 R	80	>4.41	1st quarterly
08/06/02	Chronic <i>P. promelas</i>	>100	>100	100 SG	73	1	
12/03/02	Chronic <i>C. dubia</i>	>100	>100	100 SR	100	1	2nd quarterly
12/03/02	Chronic <i>P. promelas</i>	>100	>100	100 SG	88	1	
02/11/03	Chronic <i>C. dubia</i>	7.3	>100	17 S 8 R	100	5.88	3rd quarterly Anomalous dose response
02/11/03	Chronic <i>P. promelas</i>	6.4	>100	8 SG	63	12.5	
05/13/03	Chronic <i>C. dubia</i>	>100	>100	100 SR	100	1	4th quarterly
05/13/03	Chronic <i>P. promelas</i>	96.7	>100	100 S 69 G	83	1.45	
09/23/03 [#]	Chronic <i>C. dubia</i>	>100	>100	100 SR	90	1	5th quarterly
09/23/03 [#]	Chronic <i>P. promelas</i>	>100	>100	100 SG	98	1	
12/16/03 [#]	Chronic <i>C. dubia</i>	>100	>100	100 SR	100	1	6th quarterly
12/16/03 [#]	Chronic <i>P. promelas</i>	>100	>100	100 SG	95	1	
02/24/04 [#]	Chronic <i>C. dubia</i>	>100	>100	100 SR	100	1	7th quarterly
02/24/04 [#]	Chronic <i>P. promelas</i>	>100	>100	100 SG	90	1	
06/08/04	Chronic <i>C. dubia</i>	>100	>100	100 SR	90	1	8th quarterly
06/08/04	Chronic <i>P. promelas</i>	>100	>100	100 SG	93	1	
12/07/04	Chronic <i>C. dubia</i>	>100	>100	100 SR	100	1	1st annual
12/07/04	Chronic <i>P. promelas</i>	>100	>100	17 SG	95	5.88	Anomalous dose response, pathogen present likely
05/03/05 [#]	Chronic <i>C. dubia</i>	>100	>100	100 SR	100	1	Retest
05/03/05 [#]	Chronic <i>P. promelas</i>	>100	>100	100 SG	98	1	
09/13/05 [#]	Chronic <i>C. dubia</i>	>100	>100	100 SR	100	1	2nd annual
09/13/05 [#]	Chronic <i>P. promelas</i>	>100	>100	100 SG	100	1	
07/18/06 [#]	Chronic <i>C. dubia</i>	>100	>100	100 SR	90	1	
07/18/06 [#]	Chronic <i>P. promelas</i>	>100	>100	100 SG	93	1	
Permit reissued 18 June 2007							
10/08/07	Chronic <i>C. dubia</i>	9.2	>100	100 S 8 R	90	12.5	
10/08/07	Chronic <i>P. promelas</i>	>100	>100	100 SG	93	1	
03/24/08	Chronic <i>C. dubia</i>	5.2	>100	100 S <8 R	90	12.5	
03/24/08	Chronic <i>P. promelas</i>	7.5	>100	<8 SG	90	12.5	
05/13/08 [#]	Chronic <i>C. dubia</i>	>100	>100	100 SR	100	1	1 st Annual
05/13/08 [#]	Chronic <i>P. promelas</i>	>100	>100	100 SG	90	1	

TEST DATE	TEST TYPE/ORGANISM	IC ₂₅ (%)	48- HOUR LC ₅₀ (%)	NOEC (%)	% SURV	TU _C	REMARKS
09/21/09 [#]	Chronic <i>C. dubia</i>	>100	>100	100 SR	100	1	2 nd Annual
09/21/09 [#]	Chronic <i>P. promelas</i>	>100	>100	100 SG	95	1	
10/19/10	Chronic <i>C. dubia</i>	>100	23.5	100 S 17 R	90	5.88	3 rd Annual
10/19/10	Chronic <i>P. promelas</i>	>100	>100	100 SG	95	1	
10/24/11	Chronic <i>C. dubia</i>	>100	>100	100 SR	100	1	4 th Annual
10/24/11	Chronic <i>P. promelas</i>	>100	>100	100 SG	100	1	

[#]Samples pretreated with UV radiation to guard against pathogen interference.

ABBREVIATIONS:

SR – Survival and Reproduction

SG – Survival and Growth

% SURV - Percent survival in 100% effluent

Bold-faced NOEC or TU_C values indicate that NOEC exceeded the chronic toxicity criteria.

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Caroline County, Virginia.

PUBLIC COMMENT PERIOD: TBD, 2012 to 5:00 p.m. on TBD, 2012

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Caroline County Public Utilities
P.O. Box 424, Bowling Green, VA 22427
VA0073504

NAME AND ADDRESS OF FACILITY: Caroline County Regional Wastewater Treatment Plant
22101 Rogers Clark Blvd, Ruther Glen, VA 22546

PROJECT DESCRIPTION: Caroline County Public Utilities has applied for a reissuance of a permit for the public Caroline County Regional Wastewater Treatment Plant. The applicant proposes to release treated sewage wastewaters from light industrial and residential areas at a rate of 0.50 million gallons per day into a water body. The permit also includes expansions at 1.5 and 3.0 million gallons per day. Sludge from the treatment process will be disposed via landfill. The facility proposes to release the treated sewage in the Polecat Creek in Caroline County in the York River watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, carbonaceous -Biochemical Oxygen Demand, Total Suspended Solids, Total Kjeldahl Nitrogen, Dissolved Oxygen, *E. coli*, Nitrate-Nitrite as N, Total Nitrogen, Total Phosphorus, Total Recoverable Copper and Total Recoverable Zinc.

This facility is subject to the requirements of 9VAC25-820 and has registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia. As a condition of this permit, the permittee will be required to offset in advance, any loads of total nitrogen or total phosphorus that are expected to be discharged in a given calendar year, in excess of those levels previously allowed by the facility's VPDES permit. The permittee has opted to install nutrient removal treatment that will maintain the existing load of nutrients discharged.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

Contact for public comments, document requests and additional information: The public may review the documents at the DEQ-Northern Regional Office by appointment or may request electronic copies of the draft permit and fact sheet.

Name: Douglas Frasier

Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193

Phone: (703) 583-3873 E-mail: Douglas.Frasier@deq.virginia.gov Fax: (703) 583-3821

**State “Transmittal Checklist” to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review**

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	Caroline County Regional Wastewater Treatment Plant
NPDES Permit Number:	VA0073504
Permit Writer Name:	Douglas Frasier
Date:	8 March 2012

Major [X]

Minor []

Industrial []

Municipal [X]

I.A. Draft Permit Package Submittal Includes:

	Yes	No	N/A
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?			X
8. Whole Effluent Toxicity Test summary and analysis?	X		
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics

	Yes	No	N/A
1. Is this a new or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet or permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?	X		
7. Does the fact sheet or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?	X		
a. Has a TMDL been developed and approved by EPA for the impaired water?		X	
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?	X		
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?	X		
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?		X	

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?	X		
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?	X		
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?	X		
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs (To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?			X

II.C. Technology-Based Effluent Limits (POTWs)	Yes	No	N/A
1. Does the permit contain numeric limits for <u>ALL</u> of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?			X
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a “reasonable potential” evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the “reasonable potential” evaluation was performed in accordance with the State’s approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have “reasonable potential”?	X		
d. Does the fact sheet indicate that the “reasonable potential” and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?			X
e. Does the permit contain numeric effluent limits for all pollutants for which “reasonable potential” was determined?	X		

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an “antidegradation” review was performed in accordance with the State’s approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?	X		

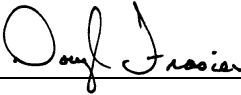
II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	X		
2. Does the permit include appropriate storm water program requirements?			X

II.F. Special Conditions – cont.	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?			X
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		X	
a. Does the permit require implementation of the “Nine Minimum Controls”?			X
b. Does the permit require development and implementation of a “Long Term Control Plan”?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?	X		

II.G. Standard Conditions		Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?		X		
List of Standard Conditions – 40 CFR 122.41				
Duty to comply	Property rights	Reporting Requirements		
Duty to reapply	Duty to provide information	Planned change		
Need to halt or reduce activity	Inspections and entry	Anticipated noncompliance		
not a defense	Monitoring and records	Transfers		
Duty to mitigate	Signatory requirement	Monitoring reports		
Proper O & M	Bypass	Compliance schedules		
Permit actions	Upset	24-Hour reporting		
		Other non-compliance		
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?		X		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	<u>Douglas Frasier</u>
Title	<u>VPDES Permit Writer, Senior II</u>
Signature	<u></u>
Date	<u>8 March 2012</u>